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Webcasting in the Supreme Court of Texas

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Purpose of this Article

This article about webcasting is intended to give a broad view of webcast court proceeding implementation issues. Though most of the information here is applicable to any presentation, a few points are especially pertinent to courts.

Equipment makes and models are given with a short functional description, so the reader will have enough search information for further reading.

Collaboration

In 2004, the Supreme Court of Texas decided to seek legislative funding to set up oral argument webcasting from its courtroom. The project was considered in the 2005 Texas Legislature session but was not funded.

In an unrelated April 2006 meeting, exploration began to examine the feasibility of providing webcast service between St. Mary's University Law School, the Office of Court Administration, and the Supreme Court of Texas. The law school was interested in the joint project because it would, among other reasons, provide an excellent educational opportunity for its students and the general public. Later in the year, a memorandum of understanding was signed and the project began. The law school bore design, construction, and equipment costs for the webcasting project.

With the Court's March 20, 2007, oral arguments, video webcasting of live and archived oral arguments began, with St. Mary's University providing a complete set of webcasting and bandwidth services.

Lighting

Optimal video lighting must be of the proper color temperature and must be evenly distributed to compensate for the video camera lesser contrast range as compared to the human eye. Regardless of how sensitive a camera is to light, shadows must be filled in to minimize contrast.

Lighting placed at too high an angle above the subject will leave dark

facial shadows and overly bright foreheads and hair. While this may not be apparent to those observing the proceedings live, the camera will exaggerate shadow darkness. On the other hand, lights placed at too low an angle may annoy and blind subjects. Overhead lighting angles between 45˚ and 75˚ work well. Also, a small amount of direct or indirect backlighting creates highlights around the edges of clothing and hair to keep subjects from blending into the background.

Lighting with a color range of 3400˚ to 5000˚ K will give natural, pleasing colors. Such lighting is now readily available in fluorescent fixtures, making the electric consumption and heat generation much lower than that of earlier video lights. Electronic ballasts on fluorescent lights will avoid creating a flicker effect. Be aware that on some types of lights, the color temperature changes as the light is brightened and dimmed. Also be aware that a mix of lighting from different source types can lead to unpleasant video colors. For example, a mix of artificial light with natural light from windows will create strange color contrasts.

At the Supreme Court of Texas, St. Mary's installed Elliptipar Model 204 fluorescent fixtures. Seven of these were placed in a row, directed toward the bench, and one was placed above the bench, which illuminated counsel at the lectern. These light fixtures are designed for flush mounting. A matching dimming system was also installed.

Specialized AV Hardware and Software

Equipment and software selected must be capable of performing multiple tasks. Software is needed for compressing as well as encoding video feed, selecting audio, controlling and selecting cameras, and inserting "keys" of graphics and titles, along with encoding the entire presentation. In addition to the equipment within the courtroom, two racks of audio-visual and computer equipment were installed in a nearby room in the Clerk of the Court's office.

Cameras

Video cameras now are available with a wide range of capabilities and controls. A first-rate production will be capable of showing close-ups, or "headshots" of the participants. To do this for multiple participants with a small number of cameras, it may be necessary for the cameras to support remote-control panning, tilting, and zooming ("pan-tilt-zoom"). This allows a small number of cameras mounted on the walls to give full coverage. In order to provide tight headshots of the judges from the camera perch in the back of the courtroom, the cameras needed a 12x zoom capability.

The Texas Supreme Court installation uses five Sony BRC-300 cameras. These cameras provide a video signal suitable for broadcast television. At the Supreme Court of Texas, this video quality is leveraged with media feed jacks at the back of the courtroom, so broadcast news media may tap in and broadcast

proceedings without courtroom intrusion.

Camera Positions

Courts typically prefer video cameras to be as unobtrusive as possible. Courtrooms are revered places, and they generally have architectural features worthy of careful historic preservation. These considerations limit camera placement, which is driven by the need to keep cameras out of reach—usually high on walls due to curious onlookers. At the same time, the need to make aesthetically-pleasing video pushes cameras lower on walls so that angles of view look natural.

The most common courtroom video flaw is that cameras are placed at a high angle to view the court or counsel, creating views with emphasized foreheads and hairdos. These views look more like surveillance video than educational programs. One way to avoid the surveillance video effect is to pilot sample views with selected cameras—even other still cameras—to view the subjects from the exact positions proposed for the cameras.

At each camera position, wiring includes a power cable, black-burst (sync) signal cables, an RS-422 serial cable (for sending pan/tilt/zoom commands to the camera), and signal cables. At the Supreme Court of Texas, the construction team hid cabling by removing wall panels, tapping into existing conduits, and core-drilling to run cable conduits below the courtroom floor. Contractors may need to use radar to find obstructions behind walls or columns while cabling. Retrofitting an existing courtroom to keep the camera cables hidden may be an expensive job, and any existing "as-built" blueprints may be helpful.

Audiovisual professionals try to place cameras so that multiple cameras do not have their axes of view crossing one another. This is especially important if multiple cameras have similar viewing perspectives, such as looking toward the front from the rear. Crossing axes of view, such as from opposite rear corners, makes camera-to-camera switches a jarring and confusing change.

In the installation at the Supreme Court of Texas, two cameras are placed side-by-side in the rear of the courtroom in order to show either a wide view of the room or to show individual headshots of the justices.

A third camera is mounted in a darkened, glassed-in box in the wall behind and above the head of the seated chief justice, in order to show the advocate presenting before the court. Two more cameras are placed in the front corners of the room, to show the clerk of court making announcements from a position at the side or to show exhibits during the argument. The two cameras at the front corners are used significantly less frequently during the oral arguments than the other three.

Camera Control

At the Supreme Court of Texas, camera pan/tilt/zoom is regulated by an AMX Integrated Controller NI-4100. The controller has a considerable amount of custom programming for this application. The unit receives messages from the audio control system indicating which microphone is live and uses software to, if necessary, reposition a camera to a preset at a known participant's position, then—after the movement is completed—the video output is switched to that camera's view. The programming on this device also cues the graphic inserter to include the appropriate name at the bottom of the screen. A manual override is available with a touch-screen camera control, programmed with a schematic diagram of the position of each judge, the clerk, and the advocate. Touching the on-screen button for each position quickly moves one of the cameras to the appropriate preset.

The integrated controller has multiple serial RS-422 connections to the cameras for controlling them.

Graphic Inserter

A "graphic" may include text, which names the judge, depicted in a headshot or other textual information, such as court name, case style, or argument date. Because the Texas project presents case information on the viewer page, external to the video frame, the Supreme Court of Texas project only uses titling on the judget headshots. The titling device is a Kramer VA-2002 graphic inserter. This device receives a message from the audio system indicating which microphone is registering speech so that the inserter can automatically insert the correct judge's name at the bottom of the video frame.

Microphones

The contractors installed new, acoustically-isolated ClockAudio microphones with shotgun sensitivity patterns at the bench. At the advocate's lectern and the marshal's station, microphones were mounted on isolated goosenecks. In the first set of oral arguments, advocates were found to move around too much to stay within the microphone's optimum field, so another microphone was added. Counsel could then move from side to side and still be heard.

Audio Processor

Microphones are connected to a Biamp Audia Solo digital audio system. It provides mixing and "gating," to select the microphone input that exceeds the threshold that is likely to be the intended speaker. This works well only with highly directional microphones. Along with the audio output, the device sends messages to the integrated controller and to the titling device to tell them which microphone is registering speech (i.e., who the speaker is).

Media Processor

The sound is captured, the cameras controlled, the video feed selected, and the titles are inserted. The

resultant program needs to be encoded, recorded, and transmitted to the content delivery service. Digital encoding and recording is captured on a Sonic Foundry MediaSite RL 440 media recorder, and The Supreme Court of Texas' oral arguments are available as Windows Media presentations embedded in a Sonic Foundry viewer page. Sonic Foundry also supports side-by-side slide show presentations. The system leverages this with a single slide used to provide a synopsis of the case being argued.

Other Equipment

Touch panels from AMX are used to control the integrated controller. An Extron blackburst generator assures that all video signals are vertically synchronized and can switch from one to another cleanly. Distribution amplifiers make a native video signal available for video monitors nearby and for the press' media feed. A Fostex audio monitor in the control rack allows the operator to hear the audio, and Marshall rack-mount multiple-screen video monitors allow the operator to see all five camera feeds as well as the output feed. A JVC HDD DVD recorder allows staff to archive programs to DVD. A general-purpose battery backup system is used to power the devices.

Bandwidth

Peak webcasts utilization is expected during live events, with use of archived media spread more evenly around the day and week. It will be necessary to provide for bandwidth to accommodate some maximum number of users expected during live events.

The Texas Supreme Court webcasts use bandwidth of 225 kbps, which provides full-motion video. This stream bandwidth, of course, is not available for dialup users. The Court planned on providing up to 300 concurrent live streams. At such bitrates, the combined bandwidth would be in excess of 67 Mbps—in excess of a T3 line from the source. Streaming media providers deal with this bottleneck by using "content delivery networks," specialized Internet services that decentralize and balance the bandwidth requirement.

Presentation and Related Content

Because of the Supreme Court of Texas and St. Mary's University collaboration, two websites were involved in providing the program. The Court's website provided case background materials and links to the law school's webcasting website. The partners agreed to review one another's website and offered suggestions to assure appropriate presentation of either the court or the law school. The partners were sensitive to each side's legitimate needs to maintain visibility and dignity.

Even though the content delivery of the streaming media was outsourced, references to static content about the cases remained on the Court website operated by the Office of Court Administration. And because there were multiple web

pages and PDF files pertaining to each case, an unexpectedly large load was generated on OCA's webserver. This was especially problematic given the wave of startup publicity.

The viewer page provided by St. Mary's provides a summary of key case issues, along with the names of counsel presenting argument.

In the event of a problem in the courtroom requiring interruption of the webcast, a transmission cutoff switch is located at key locations in the courtroom.

Operators and Personnel

The system used at the Supreme Court requires that at least one person monitor proceedings from the equipment rack, which is located in a nearby room. Early in the design process, some consideration was given to the possibility of having a person actually sit in the courtroom, to enable that person to observe first hand what was taking place in the courtroom. But that idea was abandoned because it could be distracting to other participants. The person responsible for monitoring or operating the equipment should be sufficiently familiar with the equipment and software to ensure quality recording and be available to troubleshoot any problems that may arise. While the system installed permits some remote monitoring, to date a trained technician has been present for each argument or presentation.

Archives

St. Mary's set up a separate page listing available archived webcasts of oral arguments. Viewers expect to be able to search by cause number and style of the case, as well as by date.

Marketing

Marketing creates a quandary for a new webcasting service. Although one needs to enter into a contract for some finite amount of content delivery capability, it's difficult to know how many viewers to expect. Complicating the equation is the fact that marketing will in some way influence the number of viewers. For the Texas project, both the Court and St. Mary's University issued press releases the week before the webcasts went live.

Legal Issues

In the agreement with the law school, the Office of Court Administration stipulated that any intellectual property produced as part of an oral argument webcast is the property of the state, including any value added provided by the law school, such as titling on the video.

Testing

Before the highly publicized and highly visible first webcast of an oral argument, unpublicized experimental webcasts were conducted to assure that end-to-end communication worked properly. This consisted of technicians mugging at the camera from each position and checking that

(by speaking) they could cause the cameras to reposition.

Some aspects of the production could only be tried with the entire Court sitting at the bench, asking their questions of the parties' attorneys. During the first few webcasts of actual oral arguments, much fine tuning occurred, including microphone positions, microphone "gate" levels for each judge, delay times until cameras swung to new speakers, and lighting positions and levels, etc.

Success

Chief Justice Wallace B. Jefferson was the visionary who kept all the participants focused on making this program possible. All nine members of the Supreme Court of Texas were open-minded and interested in providing this new kind of transparency to the citizenry. They entered it with dignity and optimism.

The first day of webcasting was preceded by press releases as well as the resultant newspaper articles, and court web servers were swamped with requests. Many of these requests were for related materials, such as briefs and information about the parties. Also, despite the handling of the actual webcast by St. Mary's University Law School, many viewers were attempting to navigate to webcast by first accessing the Supreme Court of Texas' website. This resulted in an unanticipated and unprecedented server load. We recommend that courts that are planning to webcast be prepared for heavy loads on their webservers. Actual viewer ship of the first webcasts was around 200 hits, but this will be a function of the advance publicity. We view the heavy load as an indication that the Supreme Court of Texas, St. Mary's University, and the Office of Court Administration provided a service the public demands.

Extending the Value

The Supreme Court of Texas and the Texas Judicial Council occasionally hold judicial branch committee meetings in the Supreme Court courtroom, in an area usually occupied by rows of chairs. St. Mary's University and the Court have begun to collaborate on extending the value of the investment by providing webcasts of these judicial branch meetings. By webcasting the meetings and providing an email address for remote viewers to send comments and questions, we have further opened the judiciary for broad participation.

These meetings are usually held at a rectangle of tables. The Court uses six to eight boundary microphones (flat, tabletop microphones) connected by long cables into the microphone connectors at the bench, via a "snake," which consolidates multiple microphone cables into a single thick cable. Extensions are used on either end to connect the microphones to the snake and to connect the snake to the connectors at the bench.

During judicial meetings, automatic camera control is turned off. Several cameras around the courtroom are

directed toward each of the four sides of the table, giving longer views of multiple participants at a time. An operator at the control rack selects cameras manually as different participants speak.

Where we would normally post a synopsis of a case being argued in the viewer window, we may either display the meeting agenda, or separate synchronized viewing of the speaker's slide presentation.

Recommendations

For most court staff to do webcasting well and to do it with high production values, a large amount of unfamiliar equipment and technologies need to be brought together. Most organizations should use the services of an audio-visual integrator/consultant. The information in this article can be used to inform the process of developing requests for proposal or contracts, and help court staff ask the right kinds of questions.

For more information, please contact Bruce Hermes at the Office of Court Administration in Texas, at bruce.hermes@courts.state.tx.us or at 512.463.1603.

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Disclaimer:
The advice and opinions represented in this bulletin are based on the experiences of various courts in the State of Texas. Such recommendations may not be suitable for other jurisdictions, and are only offered in the spirit of sharing experience as information to others considering the installation of similar technologies.